

The ILRS web site as a collaboration tool

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ILRS web site is a focal point for both the analysis and engineering community. There are various types of information available at the site for use by both communities: reports, e-mail archive, bibliographic information, site information, data quantity and quality charts and plots, “quarterly report”, analysis information, and standard product links and displays.

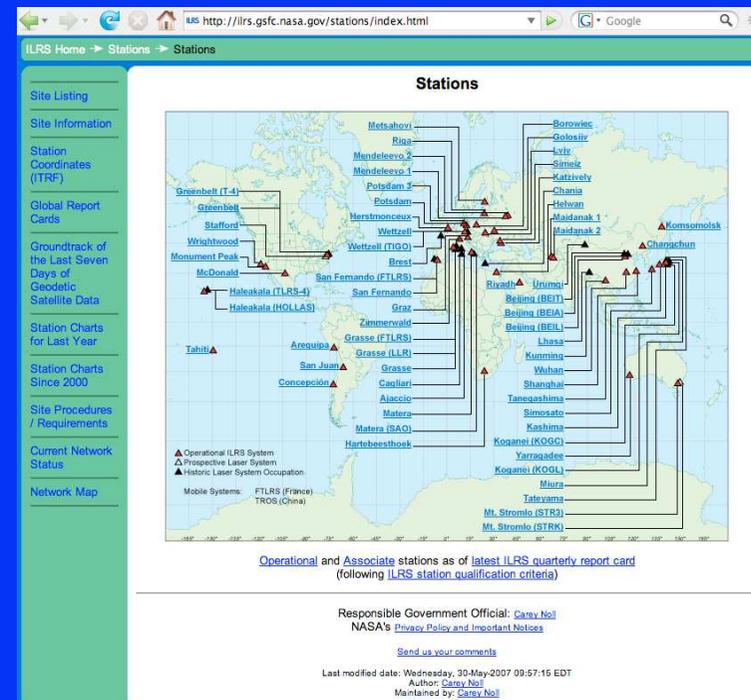
Examples of these will be shown to remind the community what is available, and to solicit comments, requests, questions . . .

station performance on multiple satellites

Are there patterns in a station's data as a function of time, local time, or satellite range, or . . .

Plots available at the ilrs web site may provide some insight . . .

(shown at Canberra, Workshop)



station performance on multiple satellites

ILRS Home → Stations → Site Listing → Yarragadee

General Site Log Meteorological Data LAGEOS Performance Satellite Data Info

Jump to: [Photo](#), [Contact](#), [Coordinates](#), [News](#), [Links](#)

Yarragadee Photo:



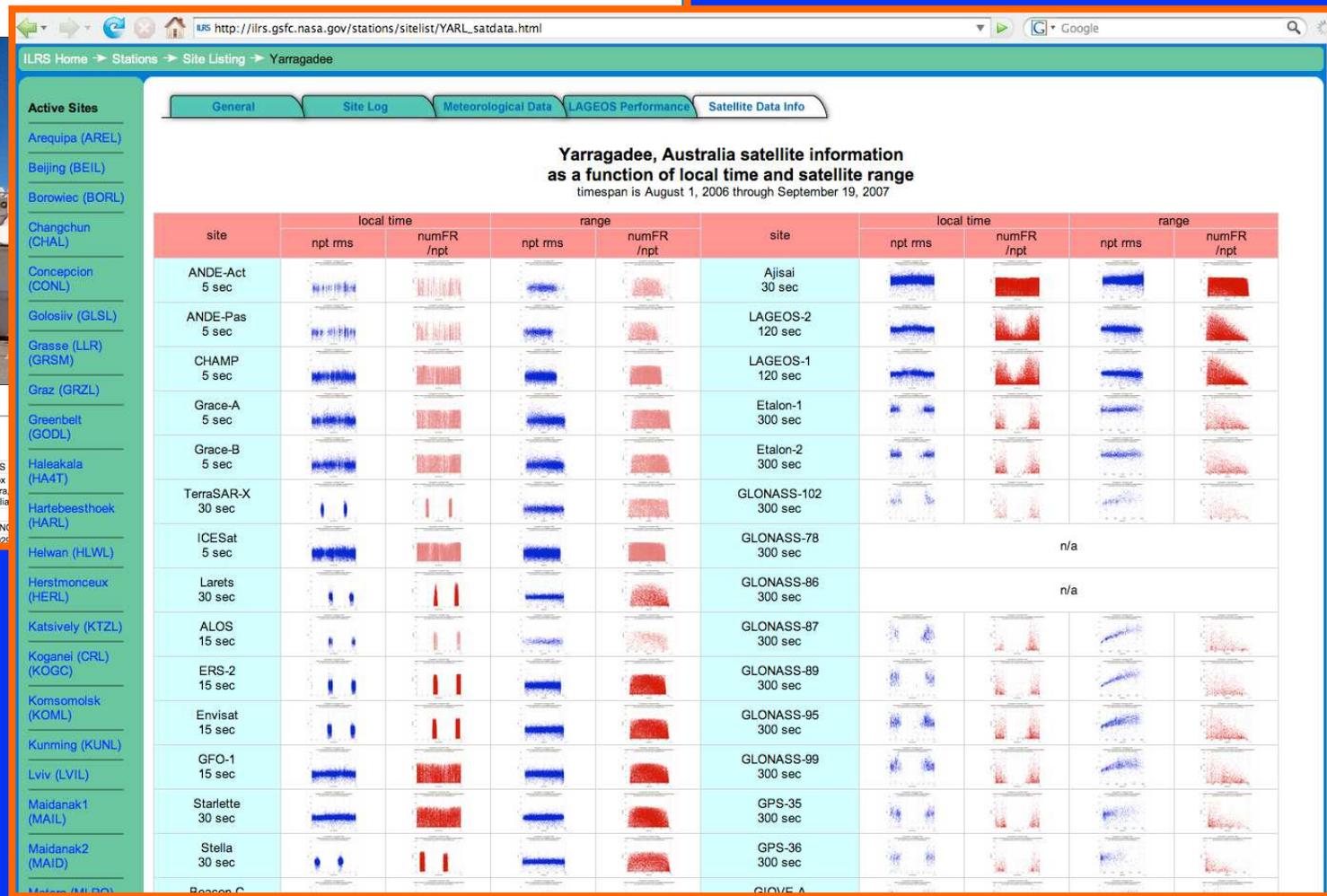
[Back to Top](#)

Yarragadee Contact:

Agency	EOSSS
Mailing Address	PO Box Dongara, Australia
Primary Contact	
Contact Name	Vince N
Telephone (primary)	618 9925

Active Sites

- Arequipa (AREL)
- Beijing (BEIL)
- Borowiec (BORL)
- Changchun (CHAL)
- Concepcion (CONL)
- Golosiv (GLSL)
- Grasse (LLR) (GRSM)
- Graz (GRZL)
- Greenbelt (GODL)
- Haleakala (HA4T)
- Hartebeesthoek (HARL)
- Helwan (HLWL)
- Herstmonceux (HERL)
- Katsively (KTZL)
- Koganei (CRL) (KOGC)
- Komsomolsk (KOML)
- Kunming (KUNL)
- Lviv (LVIL)
- Maidanak1 (MAIL)
- Maidanak2 (MAID)



satellite web pages

Are there patterns in a currently tracked satellite's data as a function of time, local time, or satellite range, or are there patterns that are station dependent . . .

Again, plots available at the ilrs web site may provide some insight . . .

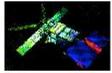
ILRS Home → Satellite Missions → Satellite Missions

Satellite Missions

Below are links related to satellite mission information:

- [Campaign Reports](#) (including final campaign statistics)
- [Analysis Reports](#) (range/time bias analysis and data quantity)
- [Mission Working Group \(Members, Charter\)](#)
- [Interactive Queries of Mission NP Data Volume by year](#)
- [Predictions](#) (formats, force models, data files, time bias functions, NORAD 2-line elements, maneuver message procedure)
- [Spacecraft ID Correspondence Table for Orbit Exchange Files \(SP3c\)](#)
- [SLR Satellite Center-of-Mass Offset \(CoM\) information](#)
- [Link Budget Calculations](#) (by Stefan Riepl)
- [Satellite LIDAR cross section report](#) (David Arnold)
- [Cross section of the APOLLO Lunar retroreflector arrays report](#) (David Arnold)
- [Satellite Maneuvers History](#)
- [The complete list of Mission Parameters](#) (sponsors, satellite numbers, orbit parameters, bin sizes, etc.)
- [Spacewarn Bulletin](#) (international email service for distribution of information on satellites)
- [Geostationary Belt](#) by Andrew Sinclair
- [WWW Satellite Home Page Links](#)

SLR satellite missions are categorized by their primary application (i.e. [geodetic](#), [earth sensing](#), [radio navigation](#), [experimental/special](#)).

 <p>Geodetic Missions The geodetic satellites are so named for their contribution to geodesy. Geodesy is a branch of applied mathematics that determines by observations and measurements the exact positions of points on the earth's surface, the shape and size of the earth, and the variations of the terrestrial gravity and magnetic fields. Read on.</p>	 <p>Earth Sensing Missions The earth sensing satellites carry experiments designed to sense the earth (i.e. acquire data on worldwide environmental changes such as the green house effect, ozone layer depletion, tropical rain forest deforestation, and abnormal climatic conditions), in order to contribute to international global environmental monitoring. Read on.</p>
 <p>Radio Navigation Missions The radio navigation satellites (Global Positioning System (GPS), and ГЛОБАЛЬНАЯ НАВИГАЦИОННАЯ СПУТНИКОВАЯ СИСТЕМА (ГЛОНАСС)) are United States and Russian satellite constellations, respectively. Read on.</p>	 <p>Experimental Missions The experimental satellites carry diverse experiments that do not fit into one of the other mission classifications (i.e. geodetic, earth sensing, positioning). These satellites are irregularly shaped objects in relatively low altitude orbits. Read on.</p>

Responsible Government Official: [Carey Noll](#)

satellite web pages

ILRS Home → Satellite Missions → List of Satellites → Satellite Missions

List of Satellites

Below is the alphabetized list of [current](#), [past](#), and [future](#) SLR satellites and their different identification schemes, bin size and basic orbit information. Click on the satellite name hyperlink for additional information about the satellite mission within the ILRS Web site (e.g., mission objectives, images, identification numbers, mission parameters, ILRS tracking status, etc.).

Current Satellites

Satellite Name	Satellite ID	SIC Code	NORAD Number	NP Indicator	Bin Size (Seconds)	Altitude (Km)	Inclination (deg)	First Data Date
Alisai	8606101	1500	16908	5	30	1485	50	13-Aug-1986
ALOS	0600201	1557	28931	3	15	720	98	14-Aug-2006
ANDE-RR Active	0605506	1071	29664	1	5	400	51.6	12-Jan-2007
ANDE-RR Passive	0605510	1072	29667	1	5	400	51.6	12-Jan-2007
Apollo11	0000100	N/A	N/A	2	variable	356.400	5	20-Aug-1969
Apollo14 Fra Mauro	0000102	N/A	N/A	2	variable	356.400	5	07-Feb-1971
Apollo15 Hadley Rille	0000103	N/A	N/A	2	variable	356.400	5	01-Sep-1971
Beacon-C	6503201	317	1328	3	15	927	41	02-Jan-1976
CHAMP								
Envisat								
ERS-2								
Etalon-1								
GPS-36								
GRACE-A								
GRACE-B								
ICESat								
Jason-1								
LAGEOS-1								
LAGEOS-2								
Larets								
Luna17								
Luna21								
Starlette								
Luna21 Sea of Serenity	0000104	N/A	N/A	2	variable	356.400	5	16-Nov-1973
Starlette	7501001	1134	7646	5	30	815	50	03-Jan-1976
Stella	9306102	0643	22824	5	30	815	99	30-Sep-1993
TerraSAR-X	0702601	6201	31698	5	30	514	97.44	16-Jun-2007

Past Satellites

Satellite Name	Satellite ID	SIC Code	NORAD Number	NP Indicator	Bin Size (Seconds)	Altitude (Km)	Inclination (deg)	First Data Date	Last Data Date	
ADEOS-1	9604601	1555	24277	5	30	815	99	15-Oct-1996	18-Aug-1997	
ADEOS-2	0205601	1556	27597	3	15	803	98.62	14-Dec-2002	22-Jan-2003	
ATEX	9805503		25615	5	30	787	85			
Chosot-1	N/A	N/A	N/A	3	15	720	92			
DIADEME-1C	6701101	6703	2674	3	15	545	40	21-Apr-1997	02-Nov-1997	
DIADEME-1D	6701401	6704	2680	3	15	585	40	22-Apr-1997	22-Apr-1997	
ERS-1	9105001	6177	21574	3	15	780	99	17-Jul-1991	16-Mar-2000	
GEOS-3	7502701	1127	7734	5	30	841	115	15-Oct-1998	13-May-1999	
GFZ-1	8601795	8001	23558	1	5	385	52	19-Apr-1995	08-Jun-1999	
GLONASS-75										
GLONASS-76										
GLONASS-77										
GLONASS-78										
GLONASS-79										
GLONASS-80										
GLONASS-81										
GLONASS-82										
GLONASS-84										
GLONASS-86										
TOPEX/Poseidon	9205201		4377	22076	3	15	1350	66	01-Jan-1992	15-Dec-2005
WESTPAC	9804301		8801	25394	3	15	835	98	23-Jul-1998	12-Jan-2002
Zeya	9701001		8888	24744	1	5	471	97	29-Mar-1997	29-Jul-1997

Future Satellites

Satellite Name	Launch Date	Altitude (Km)	Inclination (deg)
Galileo	2007	23,916	56
GOCE	2006	250	96.5
IRS-P5 (CARTOSAT-1)	05-May-2005	618	98.87
Jason-2	June 2008	1336	66
LRO-LR	October 2008		
MicroSCOPE	March 2009	730	98.2
NPOESS	2013	833	98.7
PROBA-2	December 2007	721	98
VCL	TBD	390	65

satellite web pages

ILRS Home → List of Satellites → ADEOS-1 Satellite Information

General | **ILRS Mission Support** | RetroReflector Info | Array Offset

ADEOS-1

Jump to: [Mission Objectives](#), [Mission Instrumentation](#), [Mission Parameters](#), [Additional Information](#)

Mission Photos:



Mission Objectives:

The ADvanced Earth Observing Satellite 1 (ADEOS) is a satellite for environmental monitoring. The objective of ADEOS is to monitor environmental and abnormal climatic conditions. A secondary objective is to observe observation systems.

Mission Instrumentation:

ADEOS-1 had the following instrumentation onboard:

1. Advanced visible near infrared radiometer

Current

- Ajisai
- ALOS
- ANDE-RR Active
- ANDE-RR Passive
- Apollo11
- Apollo14
- Apollo15
- Beacon-C
- CHAMP
- Envisat
- ERS-2
- Etaion-1
- Etaion-2
- ETS-8
- GFO-1
- GIOVE-A
- GLONASS-95
- GLONASS-99
- GLONASS-102

ILRS Home → List of Satellites → LAGEOS-1 Satellite Information

General | **ILRS Mission Support** | RetroReflector Info | Array Offset | **Station Data Info**

LAGEOS-1, -2

Jump to: [Mission Objectives](#), [Mission Instrumentation](#), [Mission Parameters](#), [Additional Information](#)

Mission Photos:



Courtesy of ASI

Mission Objectives:

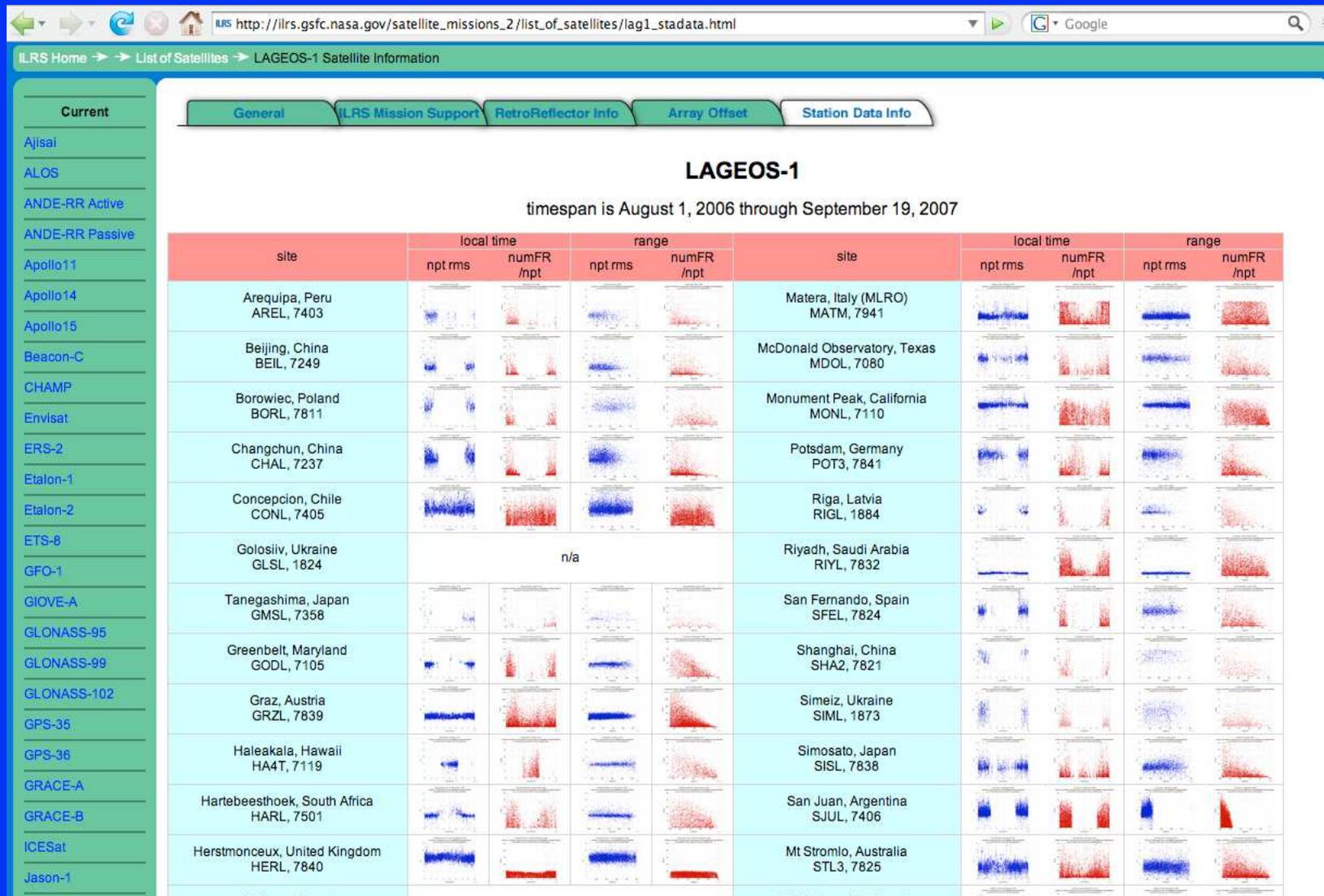
LAsER GEOdynamics Satellite-1 (LAGEOS) was designed by NASA and launched in 1976. It was the first spacecraft dedicated exclusively to high-precision laser ranging and provided the first opportunity to acquire laser-ranging data that were not degraded by errors originating in the satellite orbit or satellite array. LAGEOS-2, based on the LAGEOS-1 design, was built by the Italian Space Agency and was launched in 1992.

There are plans for the launch of LAGEOS-3, which is a joint multinational program with collaboration from France, Germany, Great Britain, Italy, Spain and the United States. Data from LAGEOS-3 would be used to measure, for the first time, a quasi-stationary property of the Earth - its gravitational magnetic dipole moment as predicted by Einstein's theory of general relativity.

Current

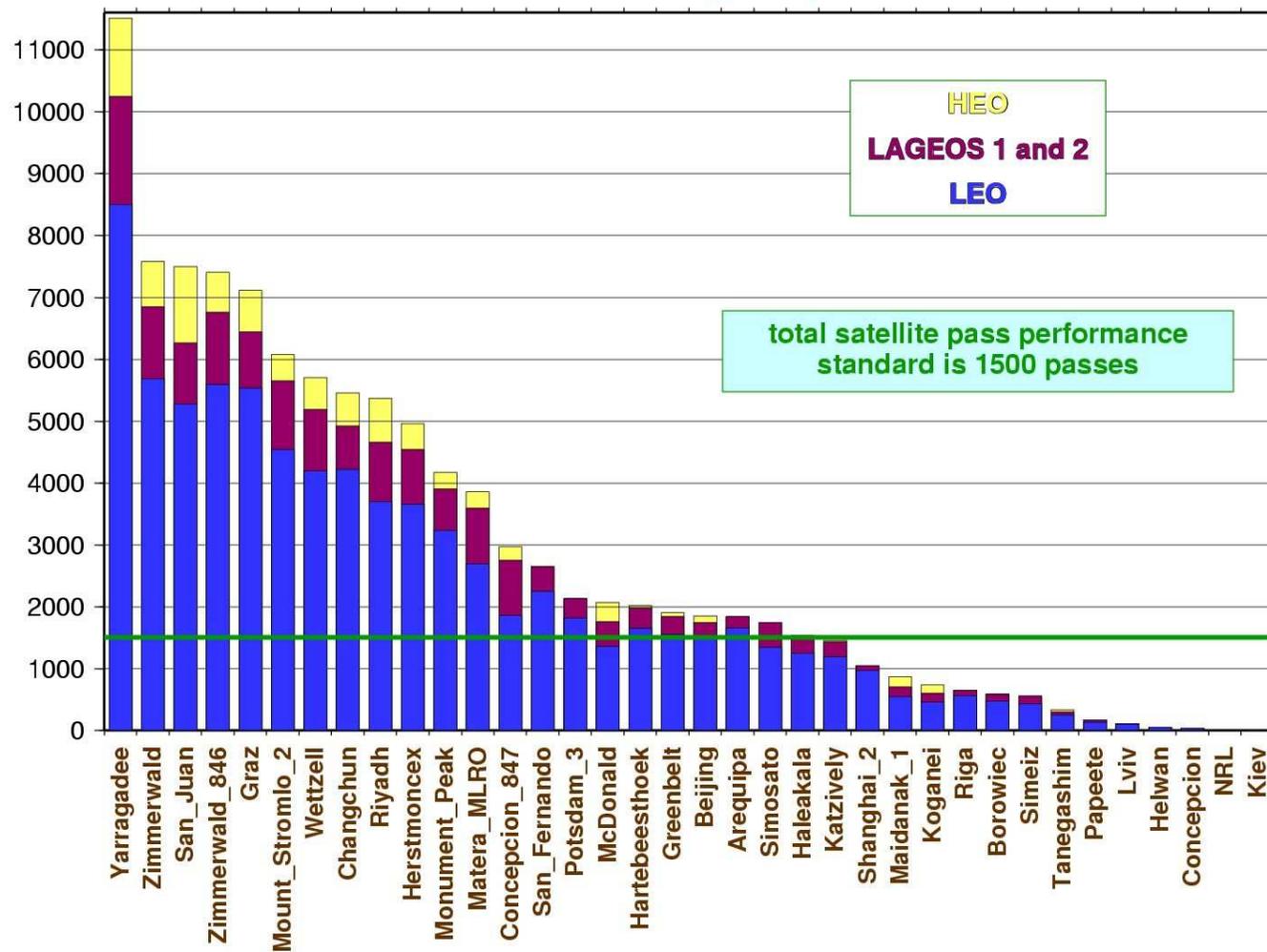
- Ajisai
- ALOS
- ANDE-RR Active
- ANDE-RR Passive
- Apollo11
- Apollo14
- Apollo15
- Beacon-C
- CHAMP
- Envisat
- ERS-2
- Etaion-1
- Etaion-2
- ETS-8
- GFO-1
- GIOVE-A
- GLONASS-95
- GLONASS-99

satellite web pages



“quarterly report card”

total passes
from October 1, 2006 through September 19, 2007



20070919

standard product web page

ILRS Home → Data & Products → Official ILRS Products

ILRS Products

Official ILRS products consist of solutions for station coordinates and Earth Orientation Parameters (EOPs). The ILRS generates weekly, unconstrained solutions for station coordinates (valid for the mid-point of each 7-day interval) and EOPs (x-pole, y-pole and Length-Of-Day (LOD), all at 1-day intervals). A description of the analysis can be found at http://ilrs.gsfc.nasa.gov/products_formats_procedures/ilrs_products_desc.html. These results are stored in subdirectories "pos+eop/YYYYMMDD", where "YYYYMMDD" is the date (YY=2 digit year, MM=2 digit month, and DD=2 digit day) of the end of each 7-day interval. Within each subdirectory, are the solutions from the combination centers and individual analysis centers.

click on the thumbnail to view a larger image of the location of the tacking data, click on the links to download the solution file via ftp

Solution end date, gps week, and data location	combination solution *	analysis center contributions						
		asi	bkg	dgfi	ga	gfz	icet	ngsf
20070908 1443	pos+eop eop sum snx snx	n/a	snx					
20070901 1442	pos+eop eop sum snx snx	n/a	snx					
20070825 1441	pos+eop eop sum snx snx	snx	snx	snx	snx	snx	snx	snx
20070818 1440	pos+eop eop sum snx snx	n/a	snx					
20070811 1439	pos+eop eop sum snx snx	snx	snx	snx	snx	snx	snx	snx

* pos+eop: *SUM*mary file assessing the quality of solution and a *SINeX* format solution file for combination **POS**ition and **E**arth Orientation Parameter solution
eop: a *SINeX* format solution file for the **EOP** combination product

The official primary ILRS combination products are formed by [ASI Space Geodesy Center](#). The ILRS's official backup combination center is [Deutsches Geodatisches Forschungsinstitut](#) (DGFI). The combination products, and the individual ILRS analysis center contributions to the official combination pos+eop and eop product can be downloaded from the ILRS ftp archive labeled as:

<ftp://cdsis.gsfc.nasa.gov/pub/slr/products/pos+eop/YYYYMMDD/CENTER.pos+eop.YYMMDD.vN.sum>
<ftp://cdsis.gsfc.nasa.gov/pub/slr/products/pos+eop/YYYYMMDD/CENTER.pos+eop.YYMMDD.vN.snx>
<ftp://cdsis.gsfc.nasa.gov/pub/slr/products/pos+eop/YYYYMMDD/CENTER.eop.YYMMDD.vN.snx>

Here, "CENTER" is replaced by either "ilrsa", or "ilrsb", or the abbreviated name of the analysis center. The version number "N" for first solution that is generated for this period is labeled as "1". If re-computations are necessary, the version number, "N", will be increased by one. The results are stored in the SINEX format ("snx"). The reader is referred to the COMMENTS section of each solution (in the file itself) or more general explanations of SINEX for further details of the solution and/or the format.

The individual analysis center solutions as well as the combination solutions are monitored on a weekly basis with a graphical and a statistical presentation of these time series available at: site hosted by the JCET analysis center http://geodesy.icet.umbc.edu/ILRS_QCOA.

For more information and/or suggestions, please contact the CDDIS/EDC Data Center representatives ([Carey Noll](#) or [Wolfgang Seemueller](#), respectively) or the ILRS Analysis Coordinators ([Ericos Pavlis](#) or [Cinzia Luceri](#)).

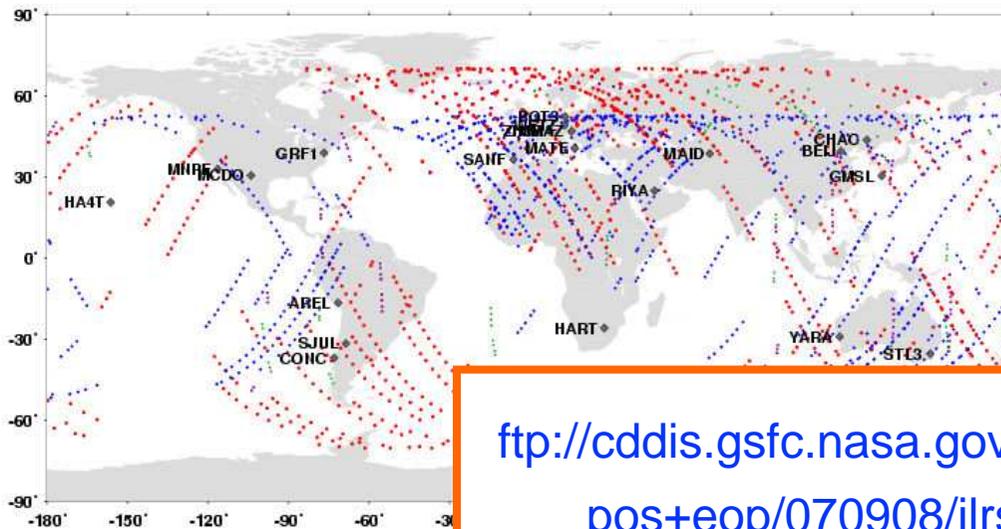
NOTICE: It is **important** that you **acknowledge** the ILRS in your papers and presentations that rely on SLR and results. Please **reference** the following citation:

Beardman, M.B., Deegan, J.L., and Beaworth, J.M. "The International Laser Ranging Service". *Advances in Space Research*, Vol. 20, No. 2, pp. 125-143, July 2002.

standard product web page

SLR data used in the ILRS pos+eop product
from 20070902 0 hr through 20070908 24 hr

- ETALON-1 19120 km 64.9 deg
- LAGEOS-1 5895 km 109 deg
- ★ ETALON-2 19120 km 65.5 deg
- ◆ LAGEOS-2 5785 km 52 deg



[ftp://cddis.gsfc.nasa.gov/pub/slr/products/
pos+eop/070908/ilrsa.pos+eop.070908.v1.sum.Z](ftp://cddis.gsfc.nasa.gov/pub/slr/products/pos+eop/070908/ilrsa.pos+eop.070908.v1.sum.Z)
[ftp://cddis.gsfc.nasa.gov/pub/slr/products/
pos+eop/070908/ilrsa.pos+eop.070908.v1.snz.Z](ftp://cddis.gsfc.nasa.gov/pub/slr/products/pos+eop/070908/ilrsa.pos+eop.070908.v1.snz.Z)
[ftp://cddis.gsfc.nasa.gov/pub/slr/products/
pos+eop/070908/ilrsa.eop.070908.v1.snz.Z](ftp://cddis.gsfc.nasa.gov/pub/slr/products/pos+eop/070908/ilrsa.eop.070908.v1.snz.Z)

discussion

consult ilrs.gsfc.nasa.gov

Questions

Comments

Suggestions